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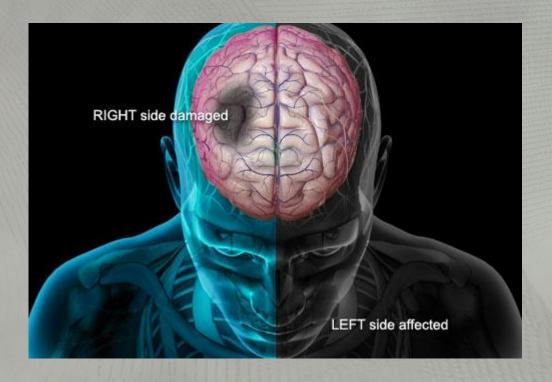
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Objectives

- ▶ Define reasons of stroke
- ► Review risk related to stroke causes
- ► Understanding the risk of a future event
- ► Exploring common medication regimes and rationales
- ► Best habits of a healthy stroke survivor

Quick Review of Stroke

"a sudden disabling attack or loss of consciousness caused by an interruption in the flow of blood to the brain, especially through thrombosis" 2016 Oxford Dictionary



Stroke is an equal opportunity disease!





Stroke is an equal opportunity disease!







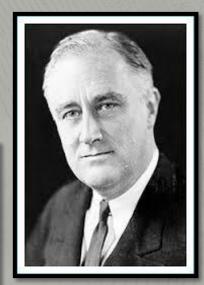
Stroke is an equal opportunity!







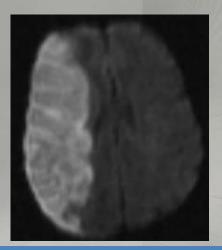




A stroke occurs when a blood vessel that carries oxygen and nutrients to the brain is either blocked by a clot or bursts. When that happens, part of the brain cannot get the blood (and oxygen) it needs, so it starts to die.

Event Types:

Occlusive or Thrombotic (Ischemic); Hemorrhagic (18%); Aneurysmal Subarachnoid Hemorrhage



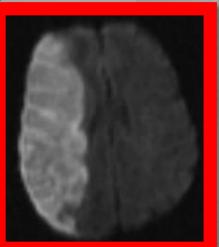




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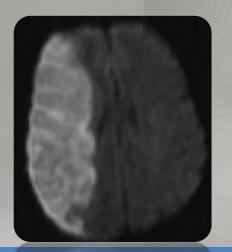




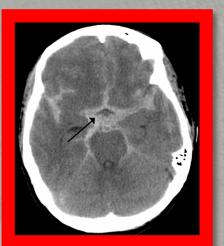
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Stroke: What's the Big Deal?

- Dropped to 5th leading cause of death in 2013 due to improved hypertension control as well as campaigns for smoking cessation, cholesterol and diabetes care.
- ▶ Women have more strokes than men, this burden is largely later in life
- ► Worldwide: Second leading cause of death
- Stroke can happen at any age!
- ► Risk of stroke more than doubles for each successive decade after the age of 55 years

Ozaffarian, D., Benjamin, E. J., Go, A. S., Arnett, D. K., Blaha, M. J., Cushman, M., ... & Howard, V. J. (2015). Heart Disease and Stroke Statistics—2016 Update A Report From the American Heart Association. *Circulation*, CIR-00000000000000350.

Stroke: What's the Big Deal?

Stroke is the leading cause of disability in adults

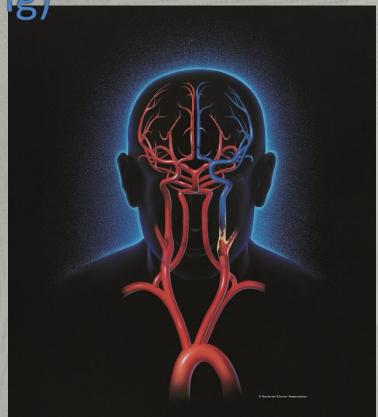
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Atherosclerosis or Large Vessel Disease

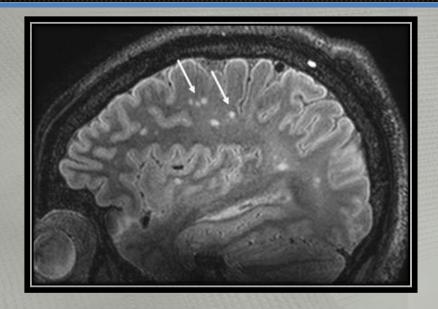
(Arteries in Neck or Brain prior to branching)

- Clinical evidence of > 50% stenosis or occlusion of a major cerebral vessel
- Highest mortality and morbidity in the ischemic stroke group
- Causes are smoking, high cholesterol, and can be accelerated by diabetes and high blood pressure



Small Vessel Disease in the Brain

- ➤ A process of damage to the small underlying vessels in the brain resulting in a small lesion < 1.50 cm
- High blood pressure and diabetes are typically the culprit
- > Can be a silent event
- Can lead to cognitive problems



Cardioembolic (from the heart)

Atrial Fibrillation

Congestive Heart Failure

Infection of the Heart Valves



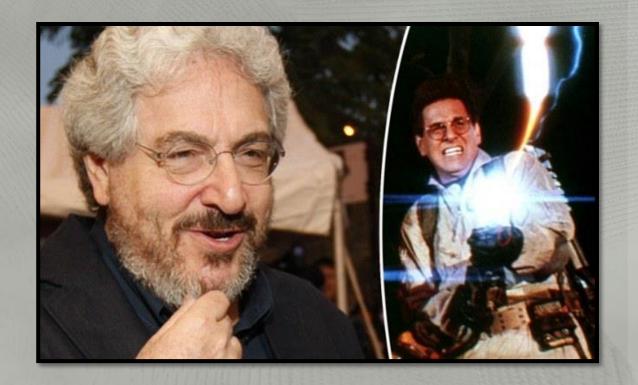
Other Causes

Rare etiologies, but a disease is 100% when it happens to you



Other Causes

- Hypercoagulable state
- Venous Sinus Thrombosis
- Dissection (trauma or unknown)
- Cerebral Vasculitis
- Sometimes, we cannot determine



Cryptogenic

This means the cause is not known...its hard to prevent a stroke when you don't the cause.



Cryptogenic

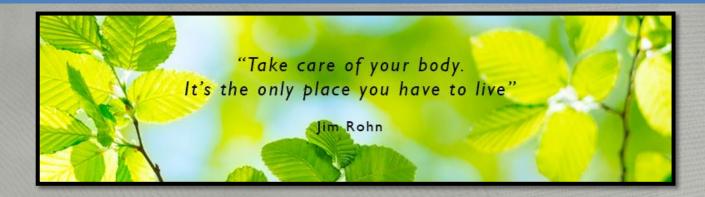
- Two trials in 2015 have lead to more use of event recorders to capture paroxysmal atrial fibrillation, which is felt to be under diagnosed
- 10 yr. risk of reoccurrence of event if stroke is cryptogenic is 32% (Li et al, 2015)



- Hypertension
- Diabetes
- Smoking
- ► Atrial Fibrillation
- ► High Cholesterol
- ► History of Stroke
- ► Family History of Stroke

► Goal of therapy to prevent stroke is < 140/90; This is the most important risk factor to modify in prevention of another stroke

- Hypertension
- Diabetes
- Smoking
- ► Atrial Fibrillation
- ► High Cholesterol
- ► History of Stroke
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- ► Goal is normoglycemia; do you know your Hgb 1c?
- ▶ Diabetes can confer as high as a 60% increase in risk of second stroke

- Hypertension
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- ► Atrial Fibrillation
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▶ Quit!

- Hypertension
- Diabetes
- Smoking
- Atrial Fibrillation
- High Cholesterol
- ► History of Stroke
- ► Family History of Stroke

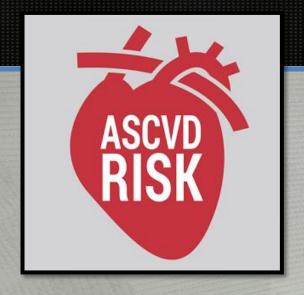


► Calculate your risk! CHA₂DS₂-VASc

Score

http://www.mdcalc.com/cha2ds2vasc-score-for-atrial-fibrillationstroke-risk/

- Hypertension
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- ► Atrial Fibrillation
- ► High Cholesterol
- ► History of Stroke
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► Calculate your risk! ASCVD Score

http://www.mdcalc.com/cha2ds2-vasc-score-for-atrial-fibrillation-stroke-risk/

Stone, Neil J., et al. "2013 ACC/AHA guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines." *Journal of the American College of Cardiology*63.25_PA (2014): 2889-2934

- Hypertension
- Diabetes
- Smoking
- ► Atrial Fibrillation
- ► High Cholesterol
- History of Stroke
- ► Family History of Stroke



Again, the risk of another event depends on the initial problem

- Hypertension
- Diabetes
- Smoking
- ► Atrial Fibrillation
- ► High Cholesterol
- ► History of Stroke
- ► Family History of Stroke



You cannot control this risk, but taking a little family history can be gold!

Stroke Prevention in Women

- Hypertension
- Preeclampsia/Eclampsia
- Migraine with Aura
- ▶ Oral Estrogen Based Contraception
- Post Menopausal Hormone Replacement Therapy
- ► Atrial fibrillation

Stroke is the 3rd leading cause of death for women



- Hypertension*
- ▶ Preëclampsia/Eclampsia
- Migraine with Aura
- ▶ Oral Estrogen Based Contraception
- Post Menopausal Hormone Replacement Therapy
- ► Atrial fibrillation
- *Defined as Blood Pressure
- over 140/90



In one trial of women over age 55, treating high blood pressure reduce cardiovascular event risk 38% (Turnbull et al., 2008)

Stroke Prevention in Women

- Hypertension
- Preeclampsia/Eclampsia*
- Migraine with Aura
- Oral Estrogen Based Contraception
- Post Menopausal Hormone Replacement Therapy
- Atrial fibrillation

Confers in increase risk for stroke for up to 30 years past the pregnancy; treating all risk factors long term is recommended

(Bushnell, et al, 2014)

*BP > 140/90 with protein in urine during or immediately after pregnancy





Stroke Prevention in Women

- Hypertension
- Preeclampsia/Eclampsia
- Migraine with Aura*
- Oral Estrogen Based Contraception
- Post Menopausal Hormone Replacement Therapy
- ► Atrial fibrillation
- * A headache pattern with a warning sign like seeing bright spots in vision or having trouble speaking

Confers a 7 fold risk of stroke if combined with smoking and use of oral birth control



- Hypertension
- Preeclampsia/Eclampsia
- Migraine with Aura
- Oral Estrogen Based Contraception
- Post Menopausal Hormone Replacement Therapy
- ► Atrial fibrillation



Low risk of stroke from age 15-44, however, combined with smoking, diabetes, high blood pressure or high cholesterol, risk may go up



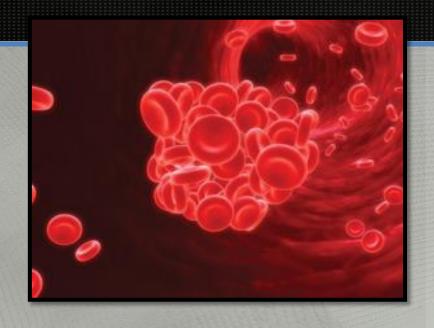
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- Post Menopausal Hormone Replacement Therapy
- Atrial fibrillation

We know that hormone replacement does not prevent stroke or heart attack; it is felt that estrogen disrupts atherosclerotic plaques; women with other risk factors 10 yrs. past menopause should avoid estrogen

Stroke Prevention in Women

- Hypertension
- Preeclampsia/Eclampsia
- Migraine with Aura
- ▶ Oral Estrogen Based Contraception
- Post Menopausal Hormone Replacement Therapy
- Atrial fibrillation



▶ 60% of Atrial Fibrillation patients are women over age 75; AF confers a 4-5 fold risk of ischemic stroke

☐ Your plan for wellness

- Practice Strong Medication Adherence
- Quit Smoking
- Routine Exercise/Weight Control
- Control of Diabetes
- What lifestyle diet fits you? Diabetics need carbohydrate control, High Blood Pressure or Heart Failure survivors needs low sodium; best overall per American Heart Association is the Mediterranean diet



- Aspirin
- Warfarin (Coumadin), Pradaxa, Eliquis, or Xeralto* (*last 3 are all still on label)
- ► Lisinopril, Ramipril or Losartan
- ► Atorvastatin, Simvastatin and Rosuvastatin (Crestor)
- ► Carvedilol (Coreg) and Metoprolol (Toprol)

Please consult with your provider any concerns

- ► Aspirin is an antiplatelet, also similar to Clopidogrel (Plavix)
- Warfarin (Coumadin), Pradaxa, Eliquis, or Xeralto* (*last 3 are all still on label)
- ► Lisinopril, Ramipril or Losartan
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- Carvedilol (Coreg) and Metoprolol (Toprol)

- Aspirin
- ➤ Warfarin (Coumadin), Pradaxa, Eliquis, or Xeralto* (*last 3 are all still on label)-all are anticoagulants, often called "blood thinners"
- Lisinopril, Ramipril or Losartan
- ► Atorvastatin, Simvastatin and Rosuvastatin (Crestor)
- ► Carvedilol (Coreg) and Metoprolol (Toprol)

- Aspirin
- Warfarin (Coumadin), Pradaxa, Eliquis, or Xeralto* (*last 3 are all still on label)
- Lisinopril, Ramipril or Losartan- all control high blood pressure and can improve heart failure; therapy may also include amlodipine
- ► Atorvastatin (Lipitor), Simvastatin (Zocor) and Rosuvastatin (Crestor)
- ➤ Carvedilol (Coreg) and Metoprolol (Toprol)

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- Warfarin (Coumadin), Pradaxa, Eliquis, or Xeralto* (*last 3 are all still on label)
- ► Lisinopril, Ramipril or Losartan
- ► Atorvastatin, Simvastatin and Rosuvastatin (Crestor)- all are for cholesterol control, target LDL (lousy cholesterol) is < 70
- ➤ Carvedilol (Coreg) and Metoprolol (Toprol)

Keep a list in your wallet!

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- Warfarin (Coumadin), Pradaxa, Eliquis, or Xeralto* (*last 3 are all still on label)
- ► Lisinopril, Ramipril or Losartan
- ► Atorvastatin, Simvastatin and Rosuvastatin (Crestor)
- Carvedilol (Coreg) and Metoprolol (Toprol or Lopressor) are beta blockers and are for persons with also a heart indication and may compliment high blood pressure control





Causes are more unique than in adults, but may follow the person into adulthood:

Boys have 1.3 higher risk than girls

- ➤ Sickle Cell Anemia- 10 % of these children have stroke, preventable
- Congenital Heart Defect- requires close follow up
- ▶ Bleeds in children can be related to illness like hemophilia or meningitis
- Seizure may be an early symptom in a young child

Spot a Stroke FAST

- ➤ You can have the symptoms of stroke in your pocket!
- ▶ Phone tool sponsored and free by the American Heart Association





Final thoughts...don't give up!





Thank You!

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